Fall 9-1-2018

# CHMY 122.02: Introduction to General Chemistry Lab

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*University of Montana, Missoula*

**General and Inorganic Chemistry Laboratory**
CHMY 122 Fall 2018

**Instructor Information**
Brittany Busby
CHEM 101A
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**Office Hours**
Monday 10am-12pm and by appointment. I am frequently available outside of office hours. Please come in 101A any time my inside office door is open.

**Electronic Reserve**
This syllabus, electronic versions of labs, and keys for quizzes and the final exam will be posted on Moodle.

**Prerequisites**
CHMY 121 is a pre-/co-requisite for this course.
Fundamental algebraic skills

**Course Description**

*This course is designed to satisfy the chemistry laboratory requirements for the Missoula College nursing program. CHMY 122 introduces general and inorganic laboratory skills and concepts. Students practice careful measurements and observations, develop quantitative relationships between variables, apply patterns determined with known samples to unknown materials, and practice critical thinking skills.*

*You will have one or two partners for every lab. We will assign you partners for each lab to help develop a community environment. Partners will be listed or announced at the beginning of each lab.*

*Labs will be done with your lab partner but I also encourage questions and discussion with the instructor, teaching assistant, and other students – Team Education.*

***Three overarching goals are for the**:*

1. **Development of your scientific reasoning skills.** We will work to help you with the development of your ability to think, specifically with respect to those thinking patterns commonly used by scientists. Chemists, and those in health professions, often use skills such as mathematical pattern recognition, the development and manipulation of mental models of particulate-level phenomena, and proportional, probabilistic, combinatorial, and correlational thinking. Our job is to help you link algebra, general chemistry, and health science applications.

2. **Development of your content knowledge.** This is knowledge of facts, models, laws, and other information associated with chemistry and its links to health sciences.

3. **Development of your understanding of the nature of science.** We want you to understand that science is a process of developing causal questions, proposing explanations, planning a test of the proposed explanation and predicting the result, and drawing conclusions about the natural world based on the observed results.

In addition to gaining content knowledge, both declarative and procedural, Team Education is designed to improve your Thinking and Reasoning Competencies and your Interpersonal Competencies, as defined below by the Association of American Medical Colleges (www.aamc.org):

***Thinking and Reasoning Competencies***

**Critical Thinking**: Uses logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions, or approaches to problems.

**Quantitative Reasoning**: Applies quantitative reasoning and appropriate mathematics to describe or explain phenomena in the natural world.

**Scientific Inquiry**: Applies knowledge of the scientific process to integrate and synthesize information, solve problems and formulate research questions and hypotheses; is facile in the language of the sciences and uses it to participate in the discourse of science and explain how scientific knowledge is discovered and validated.

**Written Communication**: Effectively conveying information to others using written words and sentences.

***Interpersonal Competencies***

**Service Orientation**: Demonstrates a desire to help others and sensitivity to others' needs and feelings; demonstrates a desire to alleviate others' distress; recognizes and acts on his/her responsibilities to society, locally, nationally, and globally.

**Social Skills**: Demonstrates awareness of others' needs, goals, feelings, and the ways social and behavioral cues affect peoples' interactions and behaviors; adjusts behaviors appropriately in response to these cues; and treats others with respect.

**Cultural Competence**: Demonstrates knowledge of social and cultural factors that affect interactions and behaviors; shows an appreciation and respect for multiple dimensions of diversity; recognizes and acts on the obligation to inform one's own judgment; engages diverse and competing perspectives as a resource for learning, citizenship, and work; recognizes and appropriately addresses bias in themselves and others; interacts effectively with people from diverse backgrounds.

**Teamwork**: Works collaboratively with others to achieve shared goals; shares information and knowledge with others and provides feedback; puts team goals ahead of individual goals.

**Oral Communication**: Effectively conveys information to others using spoken words and sentences; listens effectively; recognizes potential communication barriers and adjusts approach or clarifies information as needed.

**Grades**

Evaluation, for establishing a course grade, is based on:

***Grading Distribution***

| | |
|---|---|
| Lab reports | 60% |
| Quizzes | 15% |
| Exams | 25% |

The expectation is that to receive an A you will need to participate in and **understand** the labs, demonstrate an understanding of the connections between the labs in the quizzes, and synthesize those concepts to gain a holistic understanding of how all concepts learned are related to each other and the health sciences.

***Grading***

| | | | |
|---|---|---|---|
| 11 | Lab Reports | @ 20 points = | 220 points |
| 2 | Quizzes | @ 28 points = | 56 points |
| 3 | Exams | @ 12, 12, and 60 points = | 84 points |
| **Total** | | | **360 points** |

| | | |
|---|---|---|
| ≥93.33% guarantees A | ≥90.00% guarantees A- | ≥86.67% guarantees B+ |
| ≥83.33% guarantees B | ≥80.00% guarantees B- | ≥76.67% guarantees C+ |
| ≥73.33% guarantees C | ≥70.00% guarantees C- | ≥66.67% guarantees D+ |
| ≥63.33% guarantees D | ≥60.00% guarantees D- | <60.00% guarantees F |

***Make-up Exams, Quizzes, Labs***

I understand that everyone will have last minute emergencies, sicknesses, or other unavoidable circumstances. To help alleviate stress from these situations, your lowest lab score will be dropped. You will be present for 12 lab times, the 13$^{th}$ lab will be used to take your final exam. Therefore, 12 labs minus your lowest lab score results in your grade considering 11 labs.

If you need to make up a lab and it is a dry lab we can discuss the possibility of completing it outside of room CHMY 401. If it is a wet lab, we can provide data and 5% will be taken off your total grade.

If you have a known conflict when a quiz or exam will be given you must let me know at least a week in advance for the possibility of taking them early. No quizzes or exams will be given after it has been administered in class and the grade will be a zero.

**Course Materials and Electronic Devices**

- Safety goggles, green with elastic strap (available in bookstore, required)
- Calculator

**Weekly Schedule**

Lab Meeting: M 2:00–4:50 pm Chem 401

The curriculum is revised from previous years, so each lab will be provided on Moodle a week or two prior to when it will be conducted in lab. A hard copy of the lab will be provided for you at the beginning of that lab. You will not be required to print anything.

Our goal is to allow you enough time to get all your lab completed within the three hours of class. However, for complete understanding of the material you may need to work on the labs or study from them outside of class as well. For every *one-credit hour* you take there is a general expectation that you will require *two – three hours* outside of class studying.

**Explanation of Lab Reports**

Lab reports are the completion of the lab print out questions.

Lab reports will be due by the end of the lab period. If more time is needed let your TA know and you may turn it in by 3 pm that Friday. After that time, lab reports will be considered late and you will receive a zero.

**Student Conduct**

*All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University. All students need to be familiar with the Student Conduct Code. The University of Montana Student Conduct Code is available at http://www.umt.edu/SA/VPSA/indec.cfm/page/1321.*

Most CHMY 122 students are honest and responsible. Be advised that I do enforce the Student Conduct Code to protect the honest students from academic misconduct.

This course syllabus is not a contract; it is a tentative outline of course policies. Changes may be made before, during, or after the semester at my discretion.

**Disability Modifications**

The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and Disability Services for Students (DSS). DSS students, please contact me the first week of the semester to arrange accommodations, even if you do not yet have your DSS letter. If you think you may have a disability adversely affecting your academic performance, please contact DSS, Disability Services for Students (Lommasson 154, 243-2243).

**CHMY 122 Schedule Fall 2018**
**This schedule may vary.*

| Week of: | Experiment |
|---|---|
| Aug 27 | Lab 1: Syllabus review<br>Safety review<br>Lab walk through<br>Little exam 1 (To get an initial measure of reasoning skills. You cannot study for this so don't panic)<br>Math lab |
| Sept 3 | Labor Day: NO CLASS |
| Sept 10 | Drawer check in<br>Lab 2: Measurement – significant figures, proportions, dimensional analysis |
| Sept 17 | Lab 3: Graphing – variables, relationships |
| Sept 24 | Lab 4: Density – physical property, proportions, graphing |
| Oct 1 | Lab 5: Precipitates – chemical equations, stoichiometry, limiting reactant, graphing<br>Quiz 1 |
| Oct 8 | Lab 6: Dissolution Reaction |
| Oct 15 | Lab 7: Model of the Atom |
| Oct 22 | Lab 8: Gas Laws |
| Oct 29 | Lab 9: Hydrates – chemical equations, stoichiometry, graphing<br>Quiz 2 |
| Nov 5 | Lab 10: Solutions – solubility, concentrations, conductivity, heat, equilibria |
| Nov 12 | Veterans' Day Observed: NO CLASS |
| Nov 19 | Lab 11: Acid/Base Classification |
| Nov 26 | Lab 12: Lab locker check out<br>Evaluations<br>Little exam 2 (To get a post measure of reasoning skills. You cannot study for this so don't panic)<br>Review for Final |
| Dec 3 | Lab 13: Final Exam |
| Dec 11 | Pick up Final Exam during the real final time<br>1:10 – 3:10 pm |